

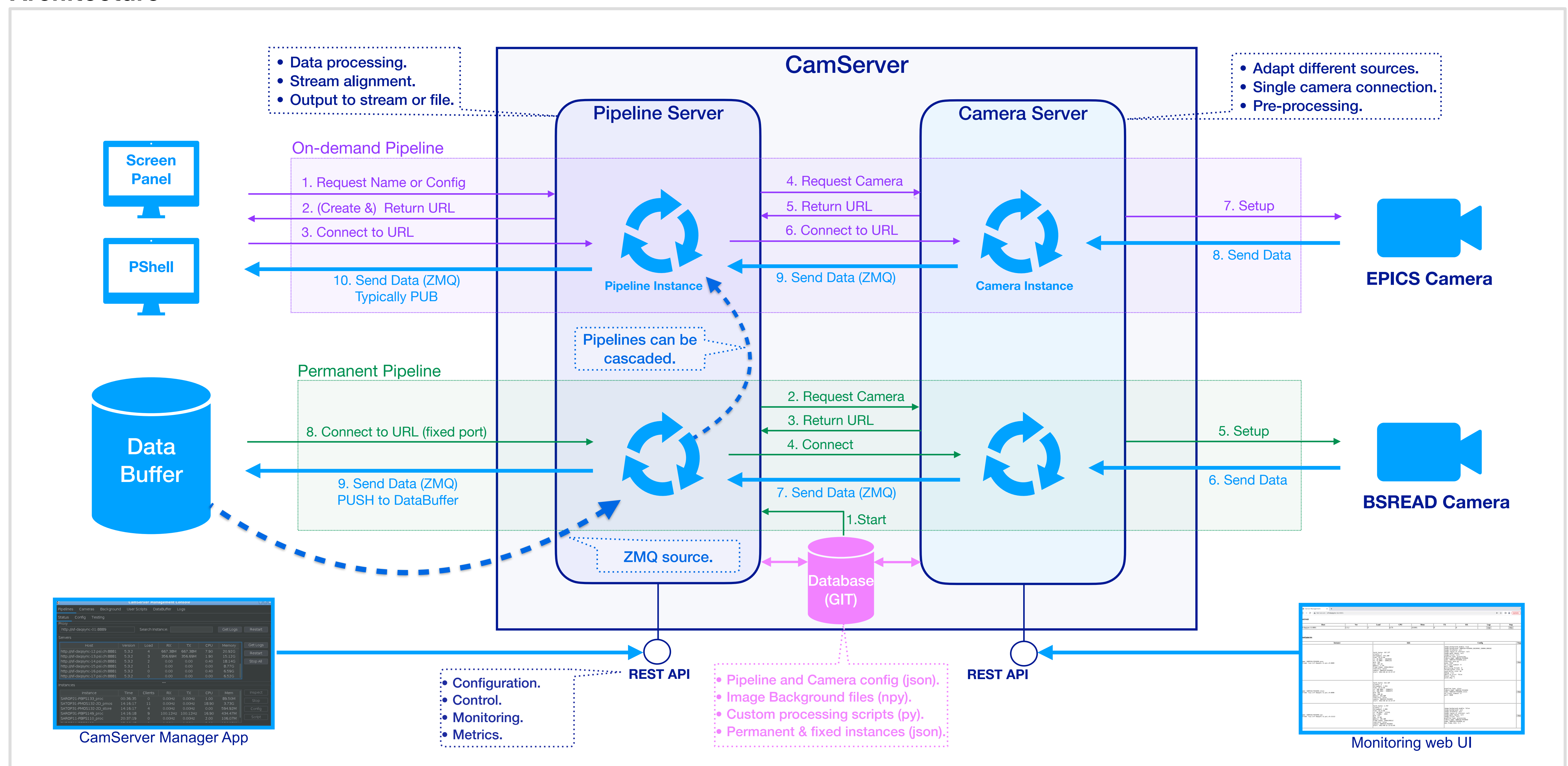
CamServer: Data Processing Pipelines @ SwissFEL

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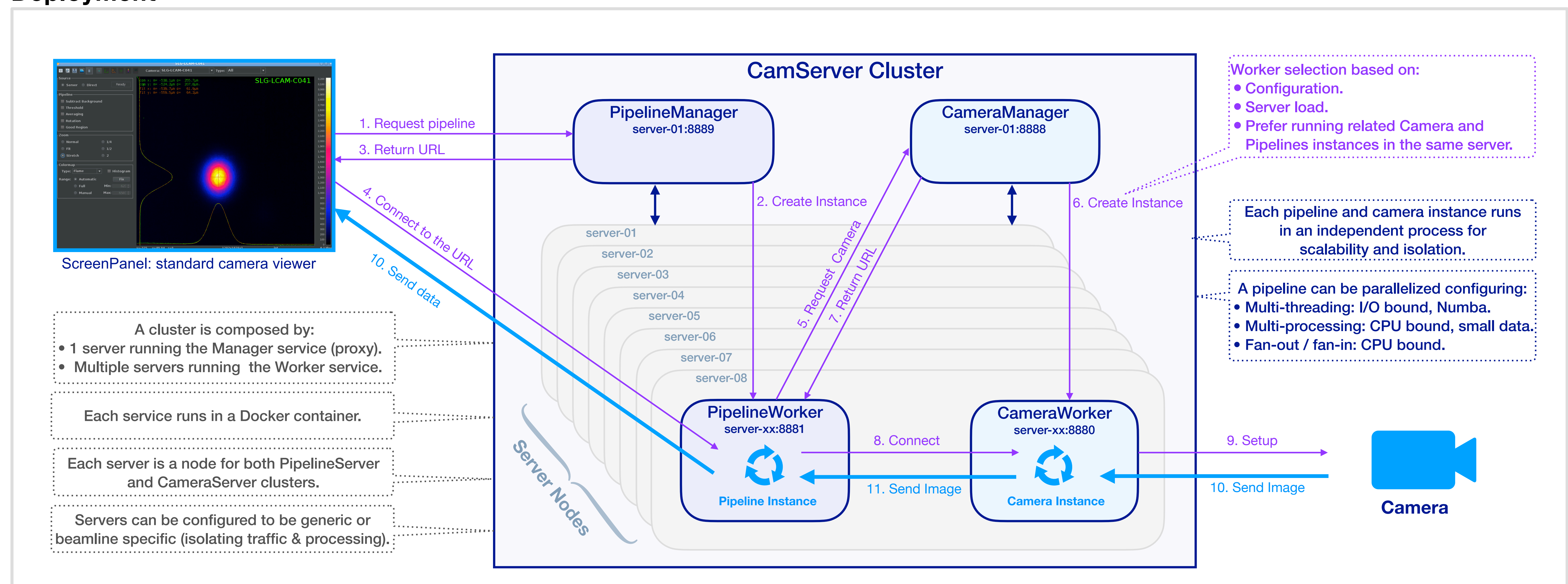
Abstract

CamServer is a Python package currently used at SwissFEL for running data processing pipelines. It is deployed in a cluster of servers and handles 100Hz high-resolution camera images and other generic ZMQ streams, aligning different data streams before processing. Standard processing pipelines are available out of the box (e.g. calculation of beam metrics), but users can also upload custom scripts. The output data streams are used for a variety of purposes: transient and permanent data storage, image visualisation, DAQ applications and beamline specific tools. The system is managed through a REST API using either a management GUI or a Python client library. Current developments include adding support for detector data, pushing logs and metrics to Elastic and creating an IDE to simplify pipeline development.

Architecture



Deployment



Figures

- Currently there are 390 configured pipelines and 170 cameras. More than 50 permanent pipelines are continuously running.
- On average more than 10 on-demand pipelines running at a time: the standard SwissFEL camera viewer application is a CamServer client.
- Cluster composed by 12 servers Intel(R) Xeon(R) Gold 6342 @ 2.80GHz each having 48 cores, 96 threads and 2 x 25Gb network adapters.
- At 100Hz each server is limited to 2 high-resolution cameras (2560x2160) but supports many (>>10) low-resolution cameras.

